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May 7, 1940. A. G. BLANCHARD 2,199,611

VALVE OPERATING STRUCTURE

Original Filed Oct. 14, 1935

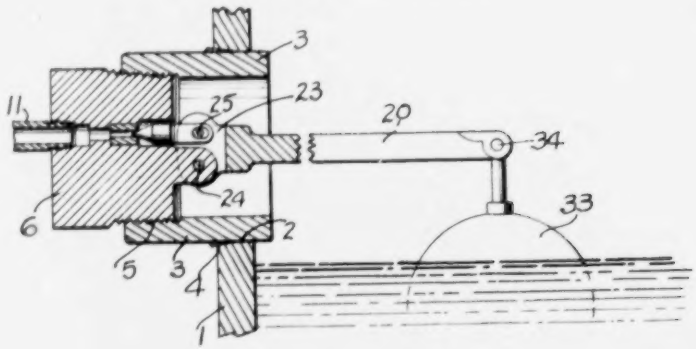

Fig. 1.

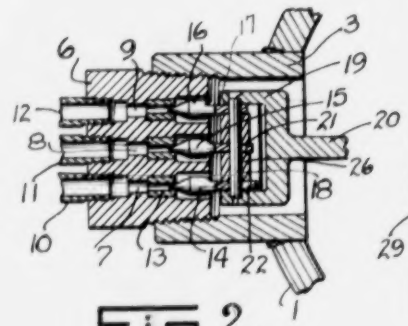

Fig. 2.

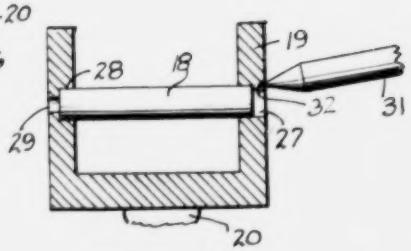

Fig. 3.

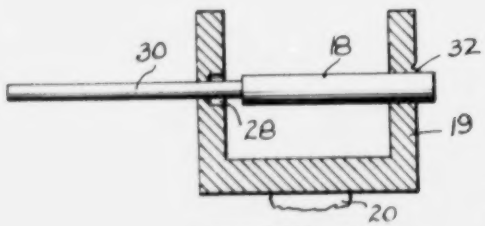

Fig. 4.

Inventor

Alva G. Blanchard

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UNITED STATES PATENT OFFICE

2,199,611

VALVE OPERATING STRUCTURE

Alva G. Blanchard, Shreveport, La.

Original application October 14, 1935, Serial No. 44,988. Divided and this application May 28, 1938, Serial No. 210,585

5 Claims. (Cl. 137—104)

The invention relates to the structure of a valve operating device.

While the device is capable of general application I have illustrated it particularly in connection with the operation of valves in outlets from steam boilers. It is sometimes desirable to provide a plurality of steam outlets from the boiler through which steam may be directed to operate regulators, fuel or water valves, and the like. Such a construction is usually operated in response to the level of the water in the boiler and my device is so illustrated.

It is an object of the present invention to provide means in connection with a single lever to operate a plurality of valves at different stages relative to the height of the water in the boiler.

It is desired that the valves be opened in a predetermined sequence so that the steam may be allowed to pass through one line first and then through other lines in a predetermined sequence.

The invention also involves a structure which is strong and compact and easily assembled in position.

The invention further involves the structure of the valve operating means through which the valve operating pin is held in position with a minimum amount of labor and expense.

The invention will be better understood in connection with the description of the drawing herewith in which

Fig. 1 is a vertical section through a valve assembly shown as connected with the float operated lever.

Fig. 2 is a horizontal section through the assembly disclosed in Fig. 1, the float being omitted.

Fig. 3 is a transverse detail of the yoke showing the manner in which the valve operating pin is secured in position.

Fig. 4 is a view similar to Fig. 3 showing the manner in which the pin may be removed when desired.

The present application is a division of my copending application Serial No. 44,988, filed October 14, 1935, for Safety appliance for boilers.

In carrying out my invention I contemplate forming in the wall 1 of the steam boiler an opening 2 formed to receive a collar 3 adapted to be welded in position in said opening, as shown at 4. The collar 3 is threaded at its outer end at 5 to receive a plug 6.

The plug 6 is formed to screw within the opening in the collar 3 and to provide outlets therethrough for the steam from the boiler. There may be two or more of these openings and in the present embodiment I have shown three outlet passages through the plug, said outlets 7, 8 and 9 having at their outer ends steam conducting pipes, 10, 11 and 12, respectively. It will be understood that said pipes may conduct the steam to any steam operated device.

At the inner ends of the passages 7, 8 and 9 are inserted valve seats 13. Each valve seat is adapted to cooperate with an adjacent valve, the valves 14, 15 and 16 cooperating with the outlets 7, 8 and 9, respectively. Each valve has a rearwardly extending valve stem 17 with an opening therein to receive a cross pin 18 mounted within a yoke 19 on the valve operating lever 20. In order that the valves may be operated in a predetermined sequence the openings through which the cross pin 18 passes are of different lengths in the different valve stems. I have shown the stem of the valve 16 as providing a close fit about the pin 18. In the stem of the valve 15, however, the opening is elongated, as shown at 21, and the opening in the stem of the valve 14 is elongated still more, as shown at 22. It will be obvious from this construction that when the lever is operated to move the valves the valve 16 will be moved first and at a predetermined interval thereafter the valve 15 will be opened and at a still later interval the valve 14 will open.

The lever 20, which is employed to operate the valves has at its end adjacent the valve a yoke 23. The lower end of the yoke engages with a pivot pin 24 which forms a fulcrum for the lever and allows the swinging of the lever in a vertical plane. At a point above the fulcrum 24 the cross pin 25 is mounted so as to engage through the openings in the valve stem as previously described. Between adjacent stems I provide spacers 26 which assist in maintaining the valves spaced equally along the pin 18.

With reference to Figs. 3 and 4, I have shown how the pin 18 may be secured in position in the yoke of the lever with a minimum consumption of time and labor. The yoke 19 is formed with an opening 27 at one side and on the opposite side there is a recess 28 which extends only part way through the wall of the yoke. At the end of the recess, however, there is a small opening 29 through which a punch 30 may be inserted to drive the pin from its mounting. In order to hold the pin in position with one end in the recess 28 I upset the metal about the opening 27 with a chisel or other instrument 31 so that it will prevent longitudinal movement of the pin from its seat. It will be obvious, however, that this upset

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position holding the pin in place by the punch 37 when it is desired to remove the pin.

The lever 29 is operated by a float 33 in the present embodiment, said float having a pivotal connection at 34 with the end of the lever.

In the operation of my device it will be obvious that the valves will be opened in response to predetermined levels of the water in the boiler. When the water is above a certain level all of the valves will be closed, but as the level is depressed first one will open and then the next, and finally the third. It will be seen, however, that if the level of the water is not lowered beyond a certain point all of the valves need not open, but each valve will open when the proper level of the float in the boiler is reached.

My invention is exceedingly simple. It will be obvious that the plug 6, upon which the valve structure is mounted, is one unitary device and that the removal of the plug will allow access to all of the valves in an obvious manner. The device is simple and strong in construction and will not easily get out of order or fail to function.

I claim:

1. A housing, a plurality of outlet passages through said housing, a valve in each of said passages, said valves having slots of varying lengths in one end to determine the order in which they are opened, a pin through said slots operated by a lever fulcrumed within said housing, a float on the end of said lever, whereby said valves are opened one at a time in sequence, responsive to the downward movement of said float.

2. A housing having an opening, a plug in said opening, a plurality of outlet passages through said plug, a valve in each of said passages, a valve operating lever fulcrumed on said plug and extending into said housing, a float on the inner end of said lever, a yoke on said lever, a cross pin on said lever, stems on said valves having openings therein to receive said cross pin, said valve stem openings being of varying length, whereby the downward movement of said lever will cause said pin to engage said valve stems to open said valves in sequence, one after the other.

3. A housing having an opening, a plug in said opening, a plurality of outlet passages through said plug, a valve in each of said passages, a valve operating lever fulcrumed on said plug and extending into said housing, a float on the inner end of said lever, a yoke on said lever, a cross pin in said yoke, stems on said valves having slotted openings therein to receive said cross pin, the openings in each stem being of a length different from that of the others, whereby said valves are timed to be opened by said lever arm in a predetermined order.

4. A plug adapted to close a fluid outlet and having a plurality of fluid passages therethrough, a valve in each of said passages, a float operated lever fulcrumed upon said plug, a yoke on said lever, a cross pin on said yoke, valve stems on said valves with slotted openings therein to be engaged by said pin, said openings being of different lengths for the purpose described.

5. A plug adapted to close a fluid outlet and having a plurality of fluid passages therethrough, a valve in each of said passages, a float operated lever fulcrumed upon said plug, a pin carried by said lever, stems on said valves having openings therein through which said pin extends, the opening in each stem being of different length from the others and means to secure said pin in said lever.

ALVA G. BLANCHARD.

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C-4

B. R. SINGLETON,

Assignor by mesne assignments to H. S. Hopkins & W. McCully.

LOW-WATER ALARM AND FIRE-EXTINGUISHER.

No. 7,767. Reissued June 26, 1877.

FIG. 1.

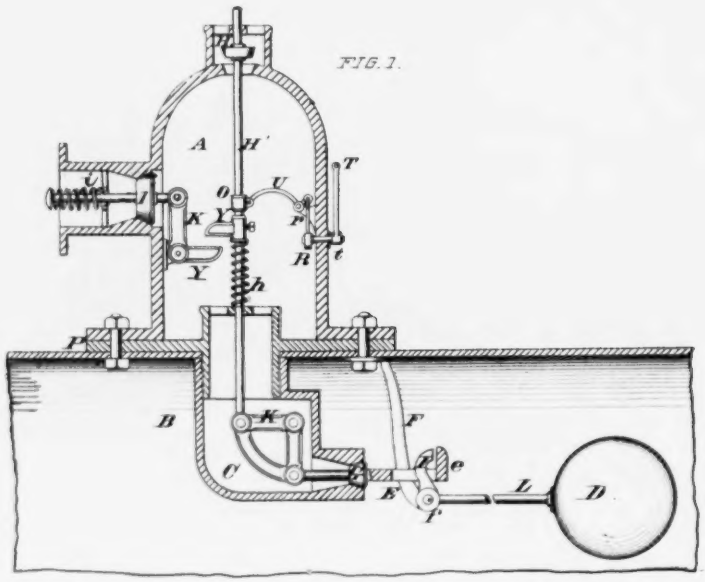


FIG. 3

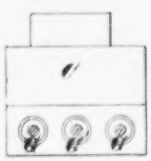


FIG. 2.

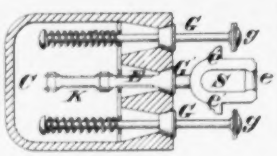
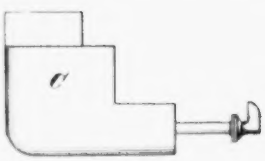


FIG. 4.



WITNESSES:

Paul Bakewell

Samuel S Boyd

INVENTOR

Benjamin R. Singleton

By Chas D. Moody

his atty:

UNITED STATES PATENT OFFICE.

BENJAMIN R. SINGLETON, OF HIGHLAND, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HENRY S. HOPKINS AND WILLIAM McCULLY.

IMPROVEMENT IN LOW-WATER ALARM AND FIRE-EXTINGUISHER.

Specification forming part of Letters Patent No. 123,795, dated February 20, 1872; reissue No. 7,767, dated June 26, 1877; application filed March 3, 1877.

To all whom it may concern:

Be it known that I, BENJAMIN R. SINGLETON, formerly of St. Louis, Missouri, and now of Highland, Madison county, Illinois, have made new and useful Improvements in Steam-Boiler Low-Water Alarms and Fire-Extinguishers, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a vertical section, showing the invention in position; Fig. 2, a horizontal section taken through that part of the invention termed the "gage-box;" and Figs. 3 and 4, respectively, a front and a side elevation of the latter.

The same letters in the various figures denote the same parts.

My invention relates to an improvement in that class of steam-boiler low-water alarms wherein the movement of a float is the cause of the operation of the alarm. It further has reference to the means for extinguishing or checking the boiler-fire, substantially as herein set forth, and to the provision for readily testing the alarm and extinguisher, and for operating an auxiliary alarm.

Referring to the annexed drawing, A represents a dome of a suitable size and shape—say, eight inches in diameter and twelve inches in height—that is attached to the boiler B. C represents what I term the "gage" or "valve box." It is arranged within the boiler, in the steam-space thereof, and underneath or opposite the dome, and the boiler-shell is perforated or removed between the box and dome to establish communication between them, and to provide for the movement of the valve-stem, as hereinafter explained.

The mode of fixing the box C in position is as shown. A plate, P, that is interposed between the dome A and boiler-shell, is provided with a boss, *p*, that projects downward through the perforation in the boiler-shell between the dome and gage-box into the boiler, and is furnished with a thread to enable the gage-box to be screwed thereon.

The box C is of suitable form, and is inclosed from the boiler, saving that it is provided with the valves G′ G G, that can be opened to admit steam from the boiler into the box. The central valve G′ is attached to a rod, E.

D represents a float, that rises and falls with the water in the boiler. It is attached to a lever, L, that is pivoted at *f* to a bracket, F, so as to cause the downward movement of the float to bring the lever L against the rod E, drawing it outward from the gage-box and opening the valve G′.

The mode of bringing the lever L to bear upon the box E is by means of an arm, L′, with which the lever L is provided. The bar E is slotted to receive the arm L′, and its inner end is enlarged to form a projection, *e*, against which the upper end of the arm L′ strikes. The rod E, at its inner end, and which is within the gage-box, is pivoted to one arm of a bell-crank lever, K, that, in turn, is pivoted to the box C, and whose other arm is pivoted to a valve-stem, H′, that extends thence upward into and through the dome A, and at its upper end furnished with a valve, H, that serves to open and close an opening in the dome leading to an alarm-whistle. (Not shown.) The stem is also provided with an arm, Y, arranged to come (as hereinafter explained) against and move the arm Y′ of another bell-crank lever, K′, whose other arm is pivoted to the stem of a valve I, that, in turn, serves to open and close a pipe that leads (only the upper end of this pipe is shown) to the boiler-furnace chamber, and so that steam can be discharged therefrom onto the fire. The valve I is seated in the direction shown, and a spring, *i*, aids in keeping it closed, saving when the crank K′ is not moved.

There is another spring, *h*, arranged between the arm Y and the bearing *p* to aid in keeping the valve G′ shut, saving when the latter is brought into use, and as follows: As the float D falls with the water in the boiler, the lever L draws against the rod E. This opens the valve G′ and draws the rod H downward. The various parts are so adjusted as to open the valve G′ before the arm Y comes in contact with the arm Y′, and before the valve H is closed. Steam, being admitted into the box C and dome A, thence passes by the valve H to the alarm-whistle, operating the latter;

or, if desired, this steam may be conducted to a suitable pump to supply more water to the boiler. The sounding of the whistle is intended more especially as a primary warning; but if the water continues to fall the stem H′ is drawn farther down, bringing the arm Y against the crank K′ and opening the valve I. Steam then passes from the boiler through the box C, dome A, and pipe J, to the furnace-chamber of the boiler, checking and extinguishing the fire. The valves H and I are not, however, necessarily coactive, either being thoroughly operative, whether the other is in action or not. Therefore the valve H may be omitted from the construction without impairing the efficiency of the fire-extinguishing device, and in practice sufficient steam escapes through the dome to operate both the alarm and the extinguisher.

An additional feature of the improvement, and that can be used either as an auxiliary alarm, or as a means for testing the working condition of the invention generally, is shown in Fig. 1. O represents a sleeve attached to the stem H′, and connected to a rod, U, that, through a cam-rod, *r*, cam R, rock-shaft *t*, (that passes through the shell of the dome,) is connected with a lever, T, to which a rope, chain, or rod may be attached, and to bring the lever readily within reach. Now, as the stem H′ descends the sleeve O is brought down with it, causing the lever T to move and sound a bell, gong, or other alarm. By moving the lever, on the other hand, motion may be transmitted from without the dome to the stem H′, and to the valves G′ and I, testing the condition of the latter by the sounding of the whistle and the appearance of steam in the furnace-chamber.

Another feature of the improvement is shown in Figs. 2, 3, and 4, viz., the additional valves G G. They serve to open and close additional openings from the boiler into the gage-box, and are operated by means of the bosses *e′ e′* on the rod *e* coming against the heads *g g* on the stems of the valves. The arrangement is such as to open the various valves G′ and G G successively. Springs *g′* aid in closing the valves G G.

What I claim is—

1. The combination of the float D, bent lever L, slotted bar E, projections *e e′ e′*, and valves G G G′, substantially as and for the purpose described.

2. The combination of the float D, lever L, bar E, bell-cranks K K′, valve-stem H′, valves H and I, and springs *h* and *i*, substantially as and for the purpose specified.

3. The combination of the float D, lever L, bar E, crank K, stem H′, sleeve O, levers or bars U *r*, cam R, shaft *t*, and lever T, substantially as and for the purpose described.

4. The combination of the lever T, shaft *t*, cam R, rod *r*, rod U, sleeve O, stem H′, arm Y, crank K, and valve I, substantially as described.

5. The combination of the float D, lever L, rod E, projection *e*, gage-box C, and valve G′, substantially as described.

6. The combination of the lever T, shaft *t*, cam R, rods *r* U, sleeve O, stem H′, and dome A, substantially as described.

7. The combination of the box C, plate P, bearing *p*, arm Y, valve G′, lever K, stem H′, and spring *h*, substantially as described.

8. The combination of the levers K K′, stem H′, arm Y, rod E, lever L, float D, and valve I, substantially as described.

BENJAMIN R. SINGLETON.

Witnesses:

JACOB E. SCHMITT,
F. M. KYLE.

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W. D. McLAUCHLIN.

LOW WATER ALARM AND BOILER FEEDER.

No. 458,794. Patented Sept. 1, 1891.

Fig. 2.

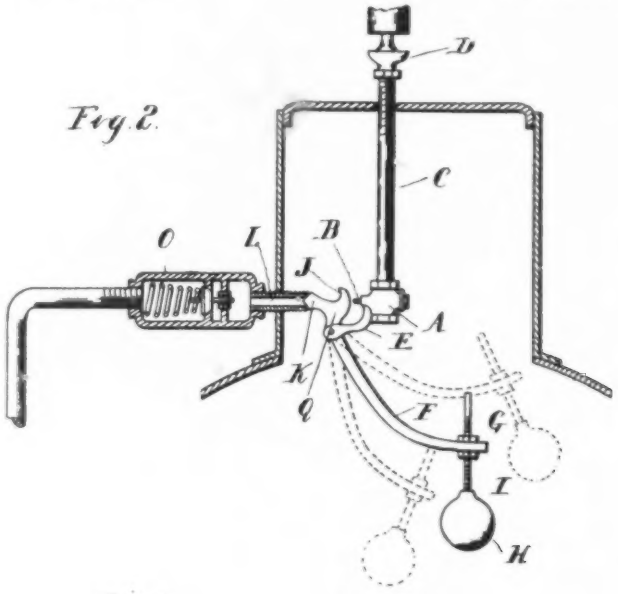
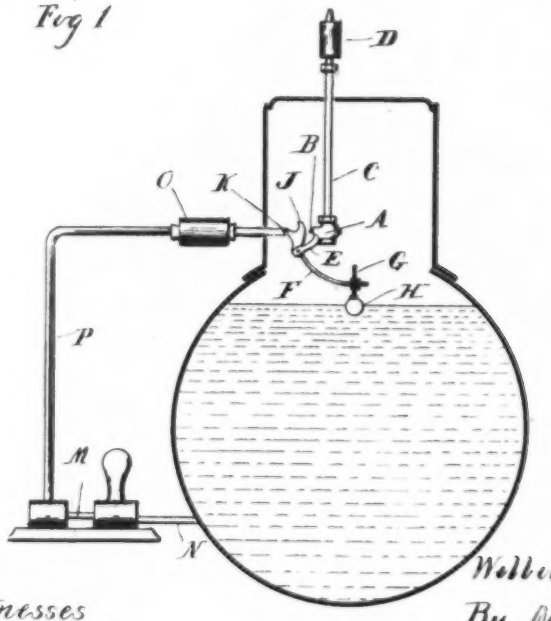


Fig 1



Witnesses
a. L. Nadler
P. M. Hulbert

Inventor
William D McLauchlin
By Thos. H. Sprague & Son
Atty

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WILLIAM D. McLAUCHLIN, OF CORUNNA, MICHIGAN, ASSIGNOR OF ONE-HALF TO AUSTIN PHILLIPS, OF SAME PLACE.

LOW-WATER ALARM AND BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 458,794, dated September 1, 1891.

Application filed April 1, 1891. Serial No. 387,310. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. McLAUCHLIN, a citizen of the United States, residing at Corunna, in the county of Shiawassee and State of Michigan, have invented certain new and useful Improvements in Low-Water Alarms and Boiler-Feed Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in boiler-feed and low-water alarm for steam-generators; and the invention consists in the peculiar construction of a float designed to open the whistle-valve on the lowering of the water beyond a predetermined point and to close the steam-supply pipe to the pump when the water has risen to the level desired to be maintained.

The invention further consists in the application to the steam-supply pipe of a spring-actuated valve set at such a tension that no steam will pass through unless it is of a sufficient pressure to operate the feed-pump.

The invention further consists in the arrangement, combination, and construction of the various parts, all as more fully hereinafter described.

In the drawings, Figure 1 is a vertical section through a boiler, showing my invention applied thereto. Fig. 2 is a similar elevation, partly in section, showing the parts in their various positions.

A is a spring-actuated valve located in the steam-dome or in any other part of the steam-space of the boiler and adapted to be opened by pressure upon the pin B. This valve is supported by the pipe C, passing through the shell of the boiler, at the upper end of which is secured the whistle D. Upon this valve is secured a bracket or arm E, to which is pivoted the float-valve lever F. This lever at its lower end is apertured to receive the stem G, secured to the upper end of the float H. This stem is screw-threaded, and the float can be transferred to any desired height by means of the lock-nuts I on opposite sides of the lever. This lever is provided with a valve-actuated arm J, so arranged that as the float lowers it will strike the pin B upon the valve and the whistle will be blown, sounding an alarm to indicate that the water has lowered to a dangerous point. The alarm will continue sounding until the float again rises.

Upon the opposite side of the arm J is formed a valve K, adapted to open and close the steam-supply pipe L to the boiler-feed M, which is connected to the boiler by means of the pipe N. In this steam-supply pipe I arrange a spring-actuated valve O of any suitable construction, setting the spring of the valve so that it will not open until sufficient pressure has accumulated in the boiler to operate the pump M. The object of this valve is that as the pump is ordinarily set below the point at which the steam finds exit from the boiler the vertical portion P thereof would fill with water if steam were allowed to enter therein at a pressure less than sufficient to operate the pump.

It will be seen that the head Q of the lever having the arm J at one side and the valve K at the other is interposed between the pin B and the steam-supply pipe L.

In the ordinary operation of the device the steam will be admitted to the feed-pump more or less in proportion as the float-valve H rises or lowers, and when the water reaches the proper height that pipe will be entirely closed. In case the water becomes too low at any time the pipe L will be opened wide, and at the same time the weight of the float-valve and lever will operate the valve A and blow the whistle. By connecting the float directly to the valve A, I obviate the necessity of putting a bracket inside of the boiler.

What I claim as my invention is—

1. In a steam-boiler, the combination, with the boiler, of a steam-pipe leading out from the same, a feed-pump into which the pipe leads, a float-actuated lever for closing the steam-pipe, and a spring-actuated valve in the steam-pipe actuated by steam-pressure independent of the lever, substantially as described.

2. In a steam-boiler, the combination, with the boiler, of an alarm, a valve for the alarm, a steam-supply pipe leading from the boiler at a point opposite the valve, a float-actuated lever between the valve and pipe-opening for

opening and closing the same, a feed-pump into which the steam-pipe enters, and a spring-actuated valve in the steam-supply pipe actuated by steam-pressure independent of the lever, substantially as described.

3. In a steam-boiler, the combination of an alarm, a steam-pipe leading out from the boiler, a valve for the alarm, and a float-actuated lever interposed between the valve and steam-pipe, one side arranged to open the steam-valve and its opposite side formed into a valve for closing the steam-supply pipe, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM D. McLAUCHLIN.

Witnesses:
S. M. HULBERT,
A. L. HOBBIE.

No. 683,021. Patented Sept. 24, 1901.

O. E. & E. E. CLARK.

BOILER FEED REGULATOR.

(Application filed Dec. 2, 1899.)

(No Model.) 2 Sheets—Sheet 1.

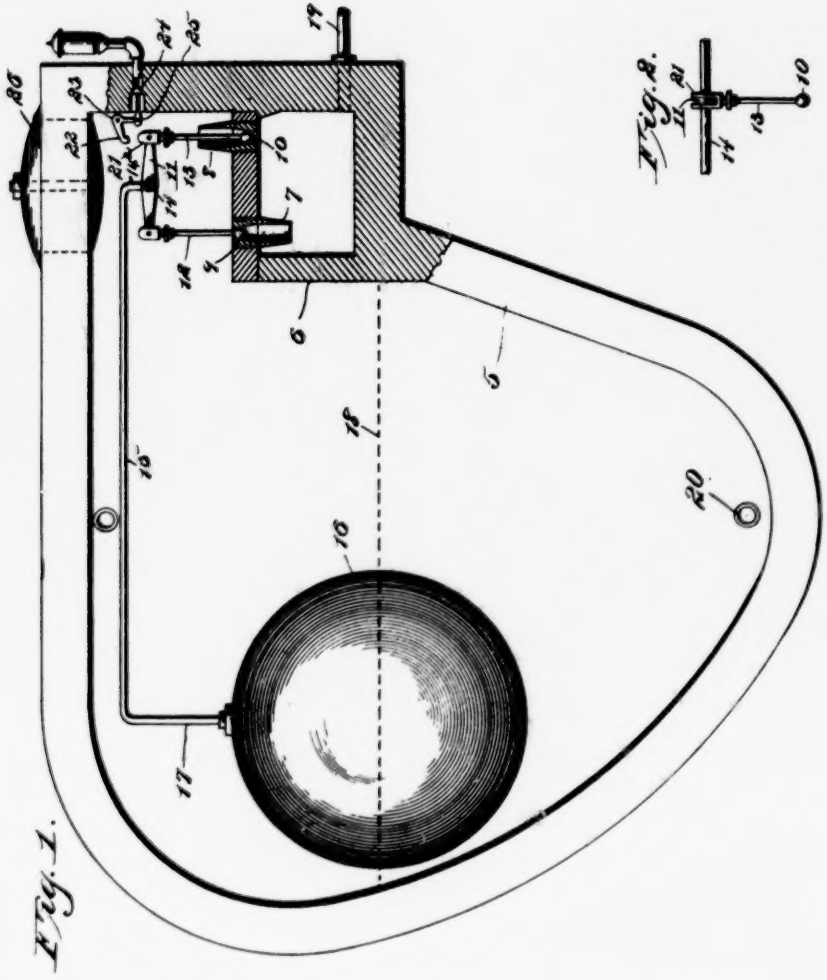

Fig. 1.

Fig. 2.

WITNESSES

Louis D. Heinrichs

B. F. Funk

INVENTORS

Omar E. Clark

Ellsworth E. Clark

By Victor J. Evans Attorney

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No. 683,021. Patented Sept. 24, 1901.

O. E. & E. E. CLARK.

BOILER FEED REGULATOR.

(Application filed Dec. 2, 1899.

(No Model.)

2 Sheets—Sheet 2.

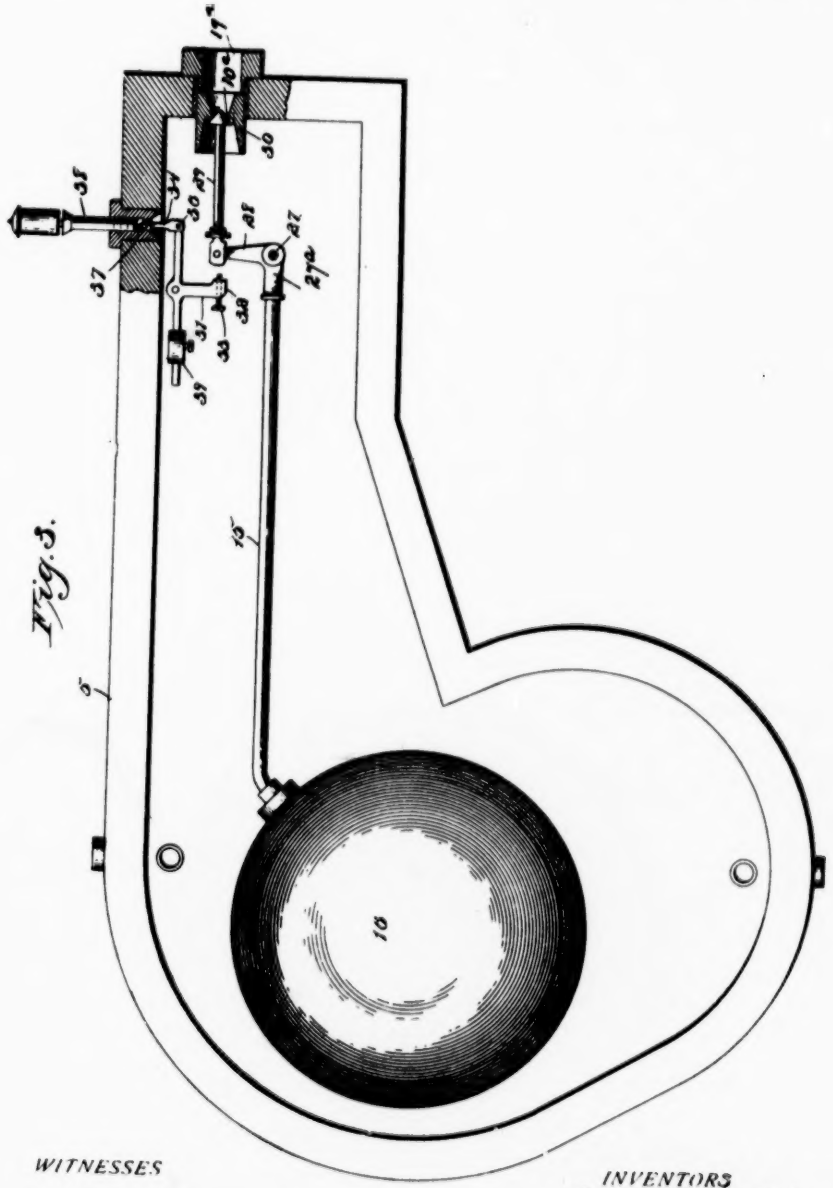

Fig. 3.

WITNESSES

Louis D. Heinrichs

B. F. Funk

INVENTORS

Omar E. Clark and

Ellsworth E. Clark

By Victor J. Evans.

Attorney

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UNITED STATES PATENT OFFICE.

OMAR E. CLARK AND ELLSWORTH E. CLARK, OF VICKSBURG, MICHIGAN.

BOILER FEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 683,021, dated September 24, 1901.

Application filed December 2, 1899. Serial No. 739,019. (No model.)

To all whom it may concern:

Be it known that we, OMAR E. CLARK and ELLSWORTH E. CLARK, citizens of the United States, residing at Vicksburg, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Boiler Feed-Regulators, of which the following is a specification.

This invention relates to steam-boilers, but more particularly to a low-water alarm and a feed device therefor; and it consists in certain novel features of construction, combination, and arrangement of parts in an apparatus of this character, which will be hereinafter more fully described, illustrated in the accompanying drawings, and set forth in the appended claims.

The objects of the invention are to provide a simple and effective means comprising a float-operated valve mechanism for letting on and cutting off the supply of steam to the injector-pump to maintain the water in the boiler at a predetermined level and to operate or control the whistle-valve when the water reaches a level below a predetermined point or the pump fails to work.

In the drawings, Figure 1 is a vertical transverse sectional view through a casing of approved construction, showing my invention applied thereto. Fig. 2 is a side elevation of the mandrel and valves; and Fig. 3 is a transverse section through a modified form of casing, showing a modified form of mechanism.

Referring now to the drawings by reference-numerals, 5 indicates a casing arranged on a steam-boiler, and in which is arranged a steam-chest 6, provided at its top with oppositely-disposed tapering valve-seats 7 and 8, in which are seated valves 9 and 10, respectively, pivotally connected to the superimposed lever 11 by means of the pendent valve-stems 12 and 13, which engage the respective ends thereof. Said lever is rigidly secured to the mandrel or shaft 14, journaled in suitable bearings and arranged in said casing. Projecting from said shaft 14 is a crank-arm 14^a, with which is connected a transversely-extending arm or rod 15, on the free end of which is a float 16, suspended from the depending portion 17 thereof and adapted to normally retain the valves heretofore referred to seated in their seats—that is, when the water assumes a level indicated by the dotted lines 18, said lines indicating the level of the water under normal conditions. Should the water recede below that level, owing to its being generated into steam or from other causes, the float will drop down to said level and gradually withdraw the valves from their seats, allowing steam to enter the steam-chest from the dome of the boiler, and said steam will pass out through the outlet-pipe 19 to a suitable injector or steam-pump, (not shown,) which will be started thereby and supply the boiler with water through the inlet-pipe 20. As soon as the water reaches the desired level the float, being carried up with it, will close the valves 7 and 8 and the pump will be secured against working until the water recedes again. Should the water become too low or the pump fail to work, the projecting end 21 of the valve-stem 13 will contact with the depending finger 22 of the bell-crank lever 23, which will withdraw the valve 24, pivoted thereto at 25, from its seat and admit steam to the whistle, thus indicating the danger of an explosion. At the top of the casing, immediately over the mechanism above described, we have provided a manhole 26, whereby access may be gained to the interior of the casing and the parts cleaned or repaired.

In the modification, 5 indicates the casing or shell, provided with a steam-outlet 10^a, in which is a valve-seat 19^a. A shaft 27 is arranged in said casing, and projecting therefrom is a crank-arm 27^a, carrying an arm or rod 15, on the free end of which is secured the float 16, adapted to rise and fall with the level of the water. An upwardly-projecting arm 28 extends from the shaft 27, and pivoted thereto is a valve-stem 29, carrying at its free end the valve 30, adapted to be seated in the seat 26 by the action of the float. The alarm mechanism consists of a pivoted lever 31, having the depending finger 32 intermediate its ends and provided with a regulating-screw 33, designed to contact with the valve-stem 29 when the water is at a low level. The valve-stem 34 is pivoted at 36 to the lever 31 and carries a valve 37, designed to normally hold the whistle-tube 38 closed, which action is facilitated by the adjustable weights 39, slidably secured on the free end of said lever 31.

It will thus be seen that we have provided a neat and simple construction of feeder and alarm, and we would have it understood that the minor details of construction may be resorted to within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described this invention, what we claim, and desire to secure by Letters Patent, is—

1. A boiler feed-regulator comprising a casing, a steam-outlet pipe connected to the casing, an inwardly-projecting valve-seat, a steam-valve having a valve-stem and seating against the valve-seat, a horizontal shaft, a horizontally-arranged float-rod provided with a float, a crank-arm on the shaft connected with the valve-stem, a crank-arm on the shaft connected with the float-rod, an indicator secured to the casing, a valve having a valve-stem and controlling the indicator, and a bell-crank lever having one arm connected with the valve-stem of the indicator-valve and the other arm adapted to be engaged by the projecting end of the stem of the steam-valve.

2. A boiler feed-regulator comprising a casing having a steam-chest provided at top with oppositely-disposed valve-seats, a steam-outlet pipe connected to the valve-chest, steam-valves having valve-stems and seating against the valve-seats, a horizontal shaft, a lever mounted on the shaft and carrying the valves, a horizontally-arranged float-rod provided with a float, a crank-arm on the shaft connected with the float-rod, an indicator secured to the casing, a valve having a valve-stem and controlling the indicator and a bell-crank lever having one arm connected with the valve-stem of the indicator-valve and the other arm adapted to be engaged by the projecting end of one of the stems of the steam-valves.

In testimony whereof we affix our signatures in presence of two witnesses.

OMAR E. CLARK.
ELLSWORTH E. CLARK.

Witnesses:
JESSE R. CROPSEY,
ROSS A. EMENGER.

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35 United States Code, §145.

Civil action to obtain patent

An applicant dissatisfied with the decision of the Board of Appeals may unless appeal has been taken to the United States Court of Customs and Patent Appeals, have remedy by civil action against the Commissioner in the United States District Court for the District of Columbia if commenced within such time after such decision, not less than sixty days, as the Commissioner appoints. The court may adjudge that such applicant is entitled to receive a patent for his invention, as specified in any of his claims involved in the decision of the Board of Appeals, as the facts in the case may appear and such adjudication shall authorize the Commissioner to issue such patent on compliance with the requirements of law. All the expenses of the proceedings shall be paid by the applicant. July 19, 1952, c. 950, § 1, 66 Stat. 803.

35 United States Code § 121.

Divisional applications

If two or more independent and distinct inventions are claimed in one application, the Commissioner may require the application to be restricted to one of the inventions. If the other invention is made the subject of a divisional application which complies with the requirements of Section 120 of this title it shall be entitled to the benefit of the filing date of the original application. A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such a requirement, shall

not be used as reference either in the Patent Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application. If a divisional application is directed solely to subject matter described and claimed in the original application as filed, the Commissioner may dispense with signing and execution by the inventor. The validity of a patent shall not be questioned for failure of the Commissioner to require the application to be restricted to one invention. July 19, 1952. c. 950. §1 66 Stat. 800.

35 United States Code §101.

Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title. July 19, 1952, c. 950, §1, 66 Stat. 797.

28 United States Code § 1254

Courts of appeals; certiorari; appeal; certified questions

Cases in the courts of appeals may be reviewed by the Supreme Court by the following methods:

(1) By writ of certiorari granted upon the petition of any party to any civil or criminal case, before or after rendition of judgment or decree;

(2) By appeal by a party relying on a state statute held by a court of appeals to be invalid as repugnant to the constitution,

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treaties or laws of the United States but such appeal shall preclude review by writ of certiorari at the instance of such appellant, and the review on appeal shall be restricted to the Federal questions presented;

(3) By certification at any time by a court of appeals of any question of law in any civil or criminal case as to which instructions are desired and upon such certification the Supreme Court may give binding instructions or require the entire record to be sent up for decision of the entire matter in controversy

June 25, 1948, c. 646, 62 Stat. 928.

28 United States Code §1291.

Final decisions of district courts.

The courts of appeals shall have jurisdiction of appeals from all final decisions of the district courts of the United States, the District Court for the Territory of Alaska, theUnited States District Court for the District of the Canal Zone, and the District Court of the Virgin Islands. except where a direct review may be had in the Supreme Court.

June 25, 1948. c. 646, 62 Stat. 929.

Manual of Patent Examining Procedure § 706.03 (k).

Duplicate claims; double patenting

Inasmuch as a patent is supposed to be limited to only one invention or. at most, several closely related indivisible inventions, limiting an application to a single claim, or a single claim to each of the related inventions might appear to be logical as well as convenient. However. court decisions have confirmed applicant's right to restate (i.e. by plural

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claiming) his invention in a reasonable number of ways. Indeed, a mere difference in scope between claims has been held to be enough.

Nevertheless, when two claims in an application are duplicates, or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to reject the other as being a substantial duplicate of the allowed claim. Also, it is possible to reject one claim on an allowed claim if they differ only by subject matter old in the art. The latter ground of rejection is set forth in the following paragraph quoted from Ex parte Whitelaw, 1915 C. D. 18; 219 O. G. 1237:

> "Claim 54 is not patentable over claim 51 and claims 53, 55 and 56 are not patentable over claim 50 in view of Comstock, No. 590,657, which shows that it is old to employ an engine-casing in tools of this character. The claims held patentable are considered as fully covering applicants invention, and applicant cannot be permitted to multiply his claims by presenting alleged combinations which distinguish from the real invention only by including elements which are old in the art and perform no new function."

This rejection, (the ex parte Whitelaw doctrine) is usually not applied if there are only a few claims in the application.

Situations related to that given above are as follows:

Conflicting subject matter in two applications of the same inventor, one of which is assigned, see Section 304.

Where there is a common assignee for two or more applications by different inventors, see Section 305.

Where the same inventor has two or more applications for species

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or for related inventions, see Chapter 800, particularly Sections 804-804.02, 822, and 822.01 for double patenting rejections of inventions not patentable over each other.

Rules of Practice in the United States Patent Office, Rule 44

44 A reservation for a future application of subject matter disclosed but not claimed in a pending application will not be permitted in the pending application.

Rules of Practice in the United States Patent Office, Rule 51

51. General requisites of an application. Applications for patents must be made to the Commissioner of Patents. A complete application comprises:

(a) A petition or request for a patent, see rule 61.

(b) A specification including a claim or claims, see rules 71 to 77.

(c) An oath, see rule 65.

(d) Drawings, when necessary, see rules 81 to 88.

(e) The prescribed filing fee. (See rule 21 for filing fees.)

Rules of Practice in the United States Patent Office, Rule 79.

79. Reservation clauses not permitted. A reservation for a future application of subject matter disclosed but not claimed in a pending application will not be permitted in the pending application, but an application disclosing unclaimed subject matter may contain a reference to a later filed application of the same applicant or owned by a common assignee disclosing and claiming that subject matter.

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Rules of Practice in the United States Patent Office, Rule 106.

106. Rejection of claims. If the invention is not considered patentable, or not considered patentable as claimed, the claims, or those considered unpatentable will be rejected. In rejecting claims for want of novelty or for want of inventions, the examiner must cite the best references at his command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not obvious, must be clearly explained and each rejected claim specified.

Claim 15

Serial No. 44,988 - Filed October 14, 1935, issued March 4, 1941, as Patent No. 2,233,395.

In a safety apparatus for boilers, the combination of a water supply conduit, a fuel supply conduit, a fluid pressure actuated valve for each of said conduits, and a master control unit comprising control valves for controlling the fluid pressure for actuating the valves in said conduits, a lever in said master unit for successively opening said master control valves, and means in said unit responsive to fluctuations in the water level in the boiler for rocking said lever. (Emphasis ours.)

Claims 8, 9 and 10

Serial No. 379,822 - Filed February 20, 1941 - Issued February 19, 1946 as Patent No. 2,395,212

8. A float chamber, a plurality of fluid passages through the wall thereof, valves in said passages, a float thereon, means on the pivoted

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end of said float arm whereby said fluid passages may be opened or closed in any predetermined order by the raise and fall of said float.

9. A float chamber, a plurality of steam conducting passages leading from said float chamber, a float lever, a pivotal support adjacent to said plurality of steam conducting passages, a float on said float lever, means on pivotal end of said float lever whereby valves in said plurality of steam conducting passages are lifted from their seats in any predetermined sequence desired by the raise and fall of said float.

10. A float chamber, a plurality of outlets from said float chamber, a float lever pivoted adjacent to said plurality of outlets, a float on said lever, means on pivoted end of said lever controlling said plurality of outlets, whereby said outlets may be opened or closed in any predetermined order by the raise and fall of said float.

Claims 1, 2 and 3

Serial No. 581,373 - Filed March 7, 1945 - Presently Pending.

1. A float chamber, a plurality of fluid passages through the wall thereof, valves in said passages, a float arm pivoted adjacent to said passages, a float thereon, and means on the pivoted end of said float arm whereby said fluid passages may be opened in a predetermined order by the fall of said float.

2. A float chamber, a plurality of steam conducting passages leading from said float chamber, a float lever, a pivotal support adjacent to said plurality of steam conducting passages, a float on said float lever, means on pivotal end of said float lever whereby valves in said plurality of steam conducting passages are lifted from their seats in a predeter-

mined sequence by the fall of said float.

3. A float chamber, a plurality of outlets from said float chamber, a float lever pivoted adjacent to said plurality of outlets, a float on said lever, means on pivoted end of said lever controlling said plurality of outlets, whereby said outlets may be opened in a predetermined order by the fall of said float.

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